

U.S.C., reside in Federal Court. To the extent that any other allegations exist, they are expressly denied.

3. Thermal Dynamics admits it conducts business in the Eastern District of Wisconsin. Thermal Dynamics denies the remaining allegations of Paragraph 3 of the Complaint.

4. Paragraph 4 of the Complaint alleges a legal conclusion, thus no answer is necessary. To the extent that an answer is required, Thermal Dynamics denies that venue is proper.

5. Thermal Dynamics admits the averments of Paragraph 5.

6. Thermal Dynamics admits the averments of Paragraph 6.

7. Thermal Dynamics admits the averments of Paragraph 7.

8. Thermal Dynamics admits the averments of Paragraph 8.

9. Thermal Dynamics admits that Plaintiffs attached a copy of the '014 patent to the Complaint. Thermal Dynamics denies the remaining allegations of Paragraph 9.

10. Thermal Dynamics is without knowledge and information sufficient to form a belief as to the truth of the averments of Paragraph 10 of the Complaint and therefore denies the same.

11. Thermal Dynamics denies the allegations of Paragraph 11 .

12. Thermal Dynamics denies the allegations of Paragraph 12.

13. Thermal Dynamics admits that Plaintiffs attached a copy of the '407 patent to the Complaint. Thermal Dynamics denies the remaining allegations of the Complaint.

14. Thermal Dynamics is without knowledge and information sufficient to form a belief as to the truth of the averments of Paragraph 14 of the Complaint and therefore denies the same.

15. Thermal Dynamics denies the allegations of Paragraph 15.

16. Thermal Dynamics denies the allegations of Paragraph 16.

17. Thermal Dynamics admits that Plaintiffs attached a copy of the '639 patent to the Complaint. Thermal Dynamics denies the remaining allegations of the Complaint.

18. Thermal Dynamics is without knowledge and information sufficient to form a belief as to the truth of the averments of Paragraph 18 of the Complaint and therefore denies the same.

19. Thermal Dynamics denies the allegations of Paragraph 19.

20. Thermal Dynamics denies the allegations of Paragraph 20.

21. Thermal Dynamics admits that Plaintiffs attached a copy of the '827 patent to the Complaint. Thermal Dynamics denies the remaining allegations of the Complaint.

22. Thermal Dynamics is without knowledge and information sufficient to form a belief as to the truth of the averments of Paragraph 22 of the Complaint and therefore denies the same.

23. Thermal Dynamics denies the allegations of Paragraph 23.

24. Thermal Dynamics denies the allegations of Paragraph 24.

25. Thermal Dynamics reasserts and realleges its responses to the preceding paragraphs as if fully set forth herein.

26. Thermal Dynamics denies the averments of Paragraph 26, except Thermal Dynamics admits that it makes, offers for sale, and sells the CutMaster™ 38 product.

27. Thermal Dynamics denies the averments of Paragraph 27, except Thermal Dynamics admits that it makes, offers for sale, and sells the CutMaster™ 38 product.

28. Thermal Dynamics denies the allegations of Paragraph 28.

29. Thermal Dynamics denies the allegations of Paragraph 29.

30. Thermal Dynamics denies the allegations of Paragraph 30.

31. Thermal Dynamics reasserts and re-alleges its responses to the preceding paragraphs 1-24 as if fully set forth herein.

32. Thermal Dynamics denies the averments of Paragraph 32, except Thermal Dynamics admits that it makes, offers for sale, and sells the CutMaster™ 38 product.

33. Thermal Dynamics denies the averments of Paragraph 33, except Thermal Dynamics admits that it makes, offers for sale, and sells the CutMaster™ 38 product.

34. Thermal Dynamics denies the allegations of Paragraph 34.

35. Thermal Dynamics denies the allegations of Paragraph 35.

36. Thermal Dynamics denies the allegations of Paragraph 36.

37. Thermal Dynamics reasserts and re-alleges its responses to the preceding paragraphs 1-24 as if fully set forth herein.

38. Thermal Dynamics denies the averments of Paragraph 38, except Thermal Dynamics admits that it makes, offers for sale, and sells the CutMaster™ 38 product.

39. Thermal Dynamics denies the averments of Paragraph 39, except Thermal Dynamics admits that it makes, offers for sale, and sells the CutMaster™ 38 product.

40. Thermal Dynamics denies the allegations of Paragraph 40.

41. Thermal Dynamics denies the allegations of Paragraph 41.

42. Thermal Dynamics denies the allegations of Paragraph 42.

43. Thermal Dynamics reasserts and re-alleges its responses to the preceding paragraphs 1-24 as if fully set forth herein.

44. Thermal Dynamics denies the averments of the Second Paragraph 38, except Thermal Dynamics admits that it makes, offers for sale, and sells the CutMaster™ 38 product.

45. Thermal Dynamics denies the averments of the Second Paragraph 39, except Thermal Dynamics admits that it makes, offers for sale, and sells the CutMaster™ 38 product.

46. Thermal Dynamics denies the allegations of the Second Paragraph 40.

47. Thermal Dynamics denies the allegations of the Second Paragraph 41.

48. Thermal Dynamics denies the allegations of the Second Paragraph 42.

AFFIRMATIVE DEFENSES

1. Upon information and belief and after a reasonable opportunity for further investigation or discovery, all of Plaintiffs' claims are barred by the doctrine of waiver.

2. Upon information and belief and after a reasonable opportunity for further investigation or discovery, one or more of the claims of the '014, '407, '639, and '827 patents are invalid for anticipation under 35 U.S.C. § 102.

3. Upon information and belief and after a reasonable opportunity for further investigation or discovery, one or more of the claims of the '014, '407, '639, and '827 patents are invalid for obviousness under 35 U.S.C. § 103.

4. Upon information and belief and after a reasonable opportunity for further investigation or discovery, one or more of the claims of the '014, '407, '639, and '827 patents are invalid for the failure of their specifications to contain adequate written descriptions of their claimed inventions under 35 U.S.C. § 112.

5. Upon information and belief and after a reasonable opportunity for further investigation or discovery, one or more of the claims of the '014, '407, '639, and '827 patents are invalid for indefiniteness under 35 U.S.C. § 112.

6. Upon information and belief and after a reasonable opportunity for further investigation or discovery, one or more of the claims of the '014, '407, '639, and '827 patents are invalid for failure of their specifications to contain enabling disclosures of their claimed inventions.

7. Upon information and belief and after a reasonable opportunity for further investigation or discovery, all of the claims of the '014, '407, '639, and '827 patents are invalid for failure of their specifications to disclose the best mode for their claimed inventions.

8. Upon information and belief and after a reasonable opportunity for further investigation or discovery, and when the claims of the '014, '407, '639, and '827 patents are properly construed in light of the prior art, Thermal Dynamics' making and selling of the CutMaster™ 38 product, as well as any other products, does not infringe them, either directly, indirectly, contributorily, literally or under the doctrine of equivalents.

9. Thermal Dynamics did not willingly, knowingly, or deliberately infringe the '014, '407, '639, and '827 patents.

10. Upon information and belief and after a reasonable opportunity for further investigation or discovery, one or more of Plaintiffs' claims are barred by laches.

11. Upon information and belief and after a reasonable opportunity for further investigation or discovery, one or more of Plaintiffs' claims are barred by estoppel.

12. Upon information and belief and after a reasonable opportunity for further investigation or discovery, one or more of Plaintiffs' claims are barred under the doctrine of acquiescence.

13. Upon information and belief and after a reasonable opportunity for further investigation or discovery, Plaintiffs' conduct with respect to the subject matter in its Original, Second Amended Complaint and Third Amended Complaint constitutes patent misuse. Plaintiffs made only a general allegation of infringement and did not specify which products allegedly infringe the '014 and '407 patents in the Original and Second Amended Complaint. Only one product produced by Thermal Dynamics, the CutMaster™ 38, has the circuitry necessary to even arguably infringe either the '014 or '407 patent. In their Third Amended Complaint, (¶¶26, 27, 32, 33, 38, 39, second 38 and second 39) Plaintiffs generally alleged that other unidentified products may infringe the '014, '407, '639 and '827 patents and request relief against these

unidentified products. Thus, to the extent that Plaintiffs assert these patents against other Thermal Dynamics products known to not infringe the '014, '407, '639, and '827 patents, Plaintiffs have impermissibly broadened the scope of their patents by implicating those products in an attempt to gain an anticompetitive advantage, thereby causing injury to Defendant Thermal Dynamics.

14. Upon information and belief and after a reasonable opportunity for further investigation or discovery, the '014, '407, '639, and '827 patents are invalid due to failure to name the correct inventor or inventors.

15. The '014 patent is unenforceable due to inequitable conduct. More particularly, and upon information and belief and after a reasonable opportunity for further investigation or discovery, the inventor, the patent attorney, and/or assignees intentionally withheld material prior art from the patent examiner during prosecution of the application giving rise to the '014 patent. Upon information and belief, the following material prior art was withheld:

- Andreyak, Bill, *"Power Factor Correction Using the UC3852 Controlled On-Time Zero Current Switching Technique"*; Unitrode Application Note U-132 (ME 035429-035444);
- Todd, Philip C., *"UC3854 Controlled Power Factor Correction Circuit Design"*; Unitrode Application Note U-134 (ME 035463-035482);
- Zendzian, Dave, *"A High Performance Linear Regulator for Low Dropout Applications"*, Unitrode Corporation U-152 (ME 035645-035653);
- Todd, Philip C., *"Boost Power Factor Corrector Design with the UC3853"*; Unitrode Corporation U-159 (ME 035777-035798);
- Panov, Y.V. et al., *"Design Issues for a Zero-Voltage-Switched Power Factor Correction Circuit and DC/DC Converter Power Processing Unit"*; Proceedings of the Virginia

Power Electronics Seminar (VPEC) 1993; Blacksburg, VA, September 19-21, 1993; pages 213-224 (ME 036062-036075);

- Jiang, Y. M. et al., "*A Novel Single-Phase Power Factor Correction Scheme*"; Proceedings of the Applied Power Electronics Conference; San Diego, CA, March 7-11, 1993; pages 287-292 (ME 036150-036154); and
- Jiang, Y. et al., "*Single-Stage Single-Phase Parallel Power Factor Correction Scheme*"; Proceedings of the Power Electronics Specialist Conference, Taipei, Taiwan, June 20-25, 1994 (ME 036156-036164).

Plaintiffs produced the above prior art in response to Thermal Dynamics' requests for production. Thus, it was in their possession, yet they failed to provide it to the Examiner. A reasonable examiner would consider each of the above prior art references material to patentability and, in all likelihood, would have rejected one or more of the claims of the '014 patent had these items been properly submitted to the Patent and Trademark Office ("PTO"). The applicant/inventor, assignees, and/or the patent attorney prosecuting the application giving rise to the '014 patent intentionally withheld one or more of the above prior art references to induce the patent examiner to allow claims.

The licensee of the '014 patent, Miller Electric (which is also a wholly owned subsidiary of ITW, the assignee of the '014 patent), published an Owner's Manual in November 1998 for a power supply known as the Spectrum 2050. The Owner's Manual contains diagrams of the electrical circuit found in commercial products that are material to the patentability of the alleged invention of the '014 patent. An example of such Owner's Manual may be found at Plaintiffs' document production at ME 033831 – 033852. The diagram may be found at ME 033845. Miller Electric publicly distributed the Owner's Manual with commercial products prior to the

filing date of the application giving rise to the '014. The diagrams in the Owner's Manual are material to patentability. Miller Electric, however, along with the inventor (an employee of Miller Electric), intentionally withheld the diagrams from the PTO with the intent to deceive the Patent Office.

In addition, upon information and belief and after a reasonable opportunity for further investigation and discovery; the inventor, the patent attorney prosecuting the application that matured in to the '014 patent, and/or the assignee (Miller Electric) withheld a material prior art patent reference, U.S. Patent No. 5,444,356, from the PTO. This reference was withheld with the intent to deceive the PTO.

Furthermore, upon information and belief and after a reasonable opportunity for further investigation or discovery, the inventor and/or Miller Electric withheld a material prior art reference, U.S. Patent No. 5,086,205 (assigned to PowCon) ("the '205 patent"). The '205 patent discloses and teaches the use of a 800 μ f capacitor in a boost circuit in a welding or cutting power supply. In addition, the '205 patent teaches and discloses the distinction between a utility power and a generator power source that makes increasing the size of the energy storage capacitor advantageous. This reference was withheld by the inventor and/or Miller Electric to deceive the PTO.

Also, in the early 1990's, prior to the earliest claimed priority date of the '014 patent, the European Union and other international regulatory bodies issued regulations mandating power factor correction in power supplies. Such regulations are: IEC Regulations - IEC 555, 555-2, 555-3, 1000, 1000-3-2, 1000-3-3 and EU Regulations EN 60555-2, 60555-3, 61000-3-2, and 61000-3-3. These regulations provided clear motivation to install a power factor correction chip

in a welding power supply. The inventor, the applicant(s) and/or patent attorney had knowledge or possession of these regulations and intentionally withheld them from the PTO.

16. The '407 patent is unenforceable due to inequitable conduct. More particularly, the inventor, patent attorney, and/or assignee of the '407 patent intentionally withheld material prior art references from the Patent Office during the prosecution of the application giving rise to the '407 patent. The following material prior art was withheld:

- Mr. Thommes testified that he recalled having seen an article written by Lloyd Dixon at some point prior to 1998. Mr. Thommes has admitted to contacting Unitrode to determine how to implement a Unitrode power factor correction chip as called for by the '407 patent. Mr. Thommes has also testified to receiving engineering application notes from Unitrode, the maker of the power factor correction chip called for in the '407 patent. The engineering notes recommend and teach how to use the chip in various circuitry. Mr. Thommes followed these notes and did not invent anything. The engineering notes likely contained the article from Mr. Dixon. None of the engineering application notes nor any articles from Mr. Dixon regarding power factor correction were disclosed to the PTO.
- Panov, Y.V. et al., *"Design Issues for a Zero-Voltage-Switched Power Factor Correction Circuit and DC/DC Converter Power Processing Unit"*; Proceedings of the Virginia Power Electronics Seminar (VPEC) 1993; Blacksburg, VA, September 19-21, 1993; pages 213-224 (ME 036062-036075);
- Jiang, Y. M. et al., *"A Novel Single-Phase Power Factor Correction Scheme"*; Proceedings of the Applied Power Electronics Conference; San Diego, CA, March 7-11, 1993; pages 287-292 (ME 036150-036154);

- Jiang, Y. et al., “*Single-Stage Single-Phase Parallel Power Factor Correction Scheme*”; Proceedings of the Power Electronics Specialist Conference, Taipei, Taiwan, June 20-25, 1994 (ME 036156-036164);
- Jovanovic et al., “*Reduction of Voltage Stress in Integrated High-Quality Rectifier-Regulators by Variable-Frequency Control*”, Proceedings of the Applied Power Electronics Conference, Orlando, FL, February 13-17, 1994, pages 569-575 (ME 036142-036149);
- Upon information and belief, Miller Electric used a reference (Welding Processes and Power Sources, Edward R. Pierre, third ed., 1985 (*see, e.g.*, pp. 176-178 (describing a typical inverter welding power source) and pp. 132-137 (discussing power factor correction in welding power sources, as well as normal industry practice to do so)) for training purposes. The reference teaches power factor correction in welding power supplies. This reference directly refutes statements made by the applicant (that the applicant was first to conceive of power factor correction for a welding power supply) during prosecution of U.S. Patent No. 6,002,103 (“the ‘103 patent”) and thus is material to patentability; and
- Translations of German patents DE 4128175A1, DE 4211906A1, DE 4411227A1.

A reasonable examiner would consider each of the above prior art references material to patentability and would have rejected one or more of claims of the ‘407 patent had these items been properly submitted to the PTO. The applicant/inventor, assignees, and/or patent attorney intentionally withheld one or more of the above prior art references to induce the patent examiner to allow claims of the ‘407 patent and the claims of the parent ‘103 patent.

The alleged invention of the '407 patent consists of the addition of an off-the-shelf Unitrode power factor correction chip to a welding power supply. The attorney prosecuting the applications giving rise to the Thommes patents stated that "[a]pplicant's invention includes the recognition that using the chip in the location described in the specification – connected to a boost converter in a welding power supply is inventive." In the early 1990's, prior to the earliest claimed priority date of the '407 patent, the European Union and other international regulatory bodies issued regulations mandating power factor correction in power supplies. Such regulations are: IEC Regulations - IEC 555, 555-2, 555-3, 1000, 1000-3-2, 1000-3-3 and EU Regulations EN 60555-2, 60555-3, 61000-3-2, and 61000-3-3. These regulations provided clear motivation to install a power factor correction chip in a welding power supply. The inventor, the applicant(s) and/or patent attorney had knowledge or possession of these regulations and intentionally withheld them from the PTO.

The applicant (Miller), the assignee (ITW), and/or the patent attorney prosecuting the application giving rise to the '407 patent, knew about U.S. Patent No. 4,521,672, which is material prior art and is assigned to Miller Electric (and now property of ITW). This reference was intentionally withheld from the PTO with the intent to deceive.

In addition, and upon information and belief and after a reasonable opportunity for further investigation or discovery, the patent attorney prosecuting the application giving rise to the '407 patent, George Corrigan, was in possession or had knowledge of material prior art, now U.S. Patent No. 5,444,356, then a patent application prepared and prosecuted by George Corrigan that directly discusses power factor correction in a welding power source. This reference was intentionally withheld from the PTO with the intent to deceive.

Furthermore, upon information and belief and after an opportunity for further investigation or discovery, Mr. Corrigan and/or Miller Electric was in possession of U.S. Patent No. 5,563,777. This reference is material to patentability and was withheld from the PTO by Mr. Corrigan and/or Miller Electric with the intent to deceive.

Also, in the early 1990's, prior to the earliest claimed priority date of the '407 patent, the European Union and other international regulatory bodies issued regulations mandating power factor correction in power supplies. Such regulations are: IEC Regulations - IEC 555, 555-2, 555-3, 1000, 1000-3-2, 1000-3-3 and EU Regulations EN 60555-2, 60555-3, 61000-3-2, and 61000-3-3. These regulations provided clear motivation to install a power factor correction chip in a welding power supply. The inventor, the applicant(s) and/or patent attorney had knowledge or possession of these regulations and intentionally withheld them from the PTO.

17. The '639 patent is unenforceable due to inequitable conduct. More particularly, the inventor, patent attorney, and/or assignee of the '639 patent intentionally withheld material prior art references from the Patent Office during the prosecution of the application giving rise to the '639 patent. The following material prior art was withheld from consideration:

- Alberkrack et al., *"Power Factor Controller IC Minimizes External Components"*; PCIM, February 1993, Pages 42-48 (JR00579-00585).
- Japanese Unexamined Patent Application Publication No. H1-215465, August 8, 1989 (MC097338-097356).

A reasonable examiner would consider the above prior art references material to patentability and, in all likelihood, would have rejected one or more of claims of the '639 patent had these items been properly submitted to the PTO. The applicant/inventor, assignees, and/or

patent attorney intentionally withheld one or more of the above prior art references to induce the patent examiner to allow claims of the '639 patent.

Also, in the early 1990's, prior to the earliest claimed priority date of the '639 patent, the European Union and other international regulatory bodies issued regulations mandating power factor correction in power supplies. Such regulations are: IEC Regulations - IEC 555, 555-2, 555-3, 1000, 1000-3-2, 1000-3-3 and EU Regulations EN 60555-2, 60555-3, 61000-3-2, and 61000-3-3. These regulations provided clear motivation to install a power factor correction chip in a welding power supply. The inventor, the applicant(s) and/or patent attorney had knowledge or possession of these regulations and intentionally withheld them from the PTO.

18. The '827 patent is unenforceable due to inequitable conduct. More particularly, the inventor, the patent attorney, and/or assignee of the '827 patent intentionally withheld certain material prior art references from the Patent Office during the prosecution of the application giving rise to the '827 patent. Only after a Notice of Allowance was issued in the '827 patent were these material prior art references submitted to the Patent Office. Upon receipt, the Examiner informed applicant that he would not consider this prior art since it was received after a Notice of Allowance was issued. The Examiner also informed applicant that if applicant wished for the art to be considered, it would need to withdraw the application from issue.

Despite knowing these references were material prior art that rendered some of its claims unpatentable, applicant intentionally did not withdraw the '827 patent application from issue and instead allowed it to issue, thereby ensuring that the Examiner would not consider this material prior art. The following references were intentionally late-submitted to ensure the PTO would not consider them: U.S. Patent Nos. 4,564,742, 4,683,529, and 5,149,935, GB2258958, S59-220285, S62-107868, H1-215465 and H2-41778. A reasonable examiner would consider each of

the above prior art references material to patentability and would have rejected one or more of the claims of the '827 patent had these items been properly submitted to the PTO.

The following additional material prior art was withheld from the parent ('407 patent) and grandparent ('103 patent) applications of the '827 patent:

- Mr. Thommes testified that he recalled having seen an article from Unitrode employee Lloyd Dixon at some point prior to 1998. Mr. Thommes has admitted to contacting Unitrode to determine how to implement a Unitrode power factor correction chip as called for by the '827 patent. Mr. Thommes has also testified to receiving engineering application notes from Unitrode, the maker of the power factor correction chip called for in the '827 patent. The engineering notes recommend and teach how to use the chip in various circuitry. The engineering notes likely contained the article from Mr. Dixon. None of the engineering application notes nor any articles from Mr. Dixon regarding power factor correction were disclosed to the PTO.
- Panov, Y.V. et al., *"Design Issues for a Zero-Voltage-Switched Power Factor Correction Circuit and DC/DC Converter Power Processing Unit"*; Proceedings of the Virginia Power Electronics Seminar (VPEC) 1993; Blacksburg, VA, September 19-21, 1993; pages 213-224 (ME 036062-036075);
- Jiang, Y. M. et al., *"A Novel Single-Phase Power Factor Correction Scheme"*; Proceedings of the Applied Power Electronics Conference; San Diego, CA, March 7-11, 1993; pages 287-292 (ME 036150-036154);
- Jiang, Y. et al., *"Single-Stage Single-Phase Parallel Power Factor Correction Scheme"*; Proceedings of the Power Electronics Specialist Conference, Taipei, Taiwan, June 20-25, 1994 (ME 036156-036164);

- Jovanovic et al., *"Reduction of Voltage Stress in Integrated High-Quality Rectifier-Regulators by Variable-Frequency Control"*, Proceedings of the Applied Power Electronics Conference, Orlando, FL, February 13-17, 1994, pages 569-575 (ME 036142-036149);
- Miller Electric used a reference (Welding Processes and Power Sources, Edward R. Pierre, third ed., 1985 (*see, e.g.*, pp. 176-178 (describing a typical inverter welding power source) and pp. 132-137 (discussing power factor correction in welding power sources, as well as normal industry practice to do so)) for training purposes. The reference teaches power factor correction in welding power supplies. This reference directly refutes statements made by the applicant (that the applicant was first to conceive of power factor correction for a welding power supply) during prosecution of U.S. Patent No. 6,002,103 and thus is material to patentability; and
- Translations of German patents DE 4128175A1, DE 4211906A1, DE 4411227A1.

A reasonable examiner would consider each of the above prior art references material to patentability and, in all likelihood, would have rejected one or more of claims of the '103, '407 and '827 patents had these items been properly submitted to the PTO. The applicant/inventor, assignees, and/or patent attorney intentionally withheld one or more of the above prior art references to induce the patent examiner to allow claims of the '827 patent and the claims of the '407 and '103 patents.

The alleged invention of the '827 patent consists of the addition of an off-the-shelf power factor correction chip to a welding power supply as directed by the manufacturer of the off-the-shelf chip. The attorney prosecuting the applications giving rise to the Thommes patents stated that "[a]pplicant's invention includes the recognition that using the chip in the location described

in the specification – connected to a boost converter in a welding power supply is inventive.” The withheld Unitrode application notes demonstrate that Mr. Thommes did not recognize anything other than following the application notes.

Also, in the early 1990’s, prior to the earliest claimed priority date of the ‘827 patent, the European Union and other international regulatory bodies issued regulations mandating power factor correction in power supplies. Such regulations are: IEC Regulations - IEC 555, 555-2, 555-3, 1000, 1000-3-2, 1000-3-3 and EU Regulations EN 60555-2, 60555-3, 61000-3-2, and 61000-3-3. These regulations provided clear motivation to install a power factor correction chip in a welding power supply. The inventor, the applicant(s) and/or patent attorney had knowledge or possession of these regulations and intentionally withheld them from the PTO.

Upon information and belief and after a reasonable opportunity for further investigation or discovery; the applicant (Miller), the assignee (ITW), and/or the patent attorney prosecuting the application giving rise to the ‘827 patent, knew about U.S. Patent No. 4,521,672, which is material prior art and is assigned to Miller Electric (and now property of ITW). This reference was intentionally withheld from the PTO with the intent to deceive.

In addition, and upon information and belief and after a reasonable opportunity for further investigation or discovery, the patent attorney prosecuting the application giving rise to the ‘827 patent, George Corrigan, was in possession or had knowledge of material prior art, now U.S. Patent No. 5,444,356, then a patent application prepared and prosecuted by George Corrigan that directly discusses power factor correction in a welding power source. This reference was intentionally withheld from the PTO with the intent to deceive.

Furthermore, upon information and belief and after an opportunity for further investigation or discovery, Mr. Corrigan and/or Miller Electric was in possession of U.S. Patent

No. 5,563,777. This reference is material to patentability and was withheld from the PTO by Mr. Corrigan and/or Miller Electric with the intent to deceive.

WHEREFORE, Thermal Dynamics prays for:

- A. A judgment dismissing Plaintiffs' Complaint with prejudice;
- B. A judgment that Thermal Dynamics does not infringe the '014, '407, '639 and '827 patents;
- C. A judgment that the '014, '407, '639 and '827 patents are invalid;
- D. A judgment that the '014, '407, '639 and '827 patents are unenforceable;
- E. A recovery of interest and costs against Plaintiffs and other such relief as this Court deems just and proper; and
- F. A judgment that the defense of this case is exceptional, entitling Thermal Dynamics to their reasonable attorneys' fees pursuant to 35 U.S.C. §285.

COUNTERCLAIMS

Thermal Dynamics asserts the following counterclaims against Plaintiffs:

1. Thermal Dynamics is a corporation organized and existing under the laws of Delaware, with its principal place of business located at 82 Benning Street, West Lebanon, New Hampshire 03784.
2. ITW is a corporation organized and existing under the laws of Delaware, with its principal place of business located at 3600 West Lake Avenue, Glenview, Illinois 60025-5811.
3. Miller is a corporation organized and existing under the laws of Delaware, with its principal place of business located at 1635 West Spencer Street, Appleton, Wisconsin 54912-1079.

4. Subject matter jurisdiction over Thermal Dynamic's counterclaims exists pursuant to 28 U.S.C. §§ 1331 (federal question), 1338(a) (patents), and 2201 (declaratory judgment).

5. Venue is proper in this judicial district pursuant to 28 U.S.C. §§ 1391(b) and (c), and 28 U.S.C. § 1400(b). Plaintiffs are subject to personal jurisdiction in this judicial district because Plaintiffs filed this action in this district.

COUNT I

The Claims Of The '014, '407, '639 and '827 Patents Are Invalid As Anticipated By Prior Art.

6. The claims of the '014, '407, '639 and '827 patents are invalid for anticipation under 35 U.S.C. § 102.

COUNT II

The Claims Of The '014, '407, '639 and '827 Patents Are Invalid As Obvious In View Of Prior Art.

7. The claims of the '014, '407, '639 and '827 patents are invalid for obviousness under 35 U.S.C. § 103.

COUNT III

The Claims of The '014, '407, '639 and '827 Patents Are Invalid for Inadequate Written Description

8. Upon information and belief and after an opportunity for further investigation and discovery, the '014, '407, '639 and '827 patents are invalid for failure of their specifications to contain an adequate written description as required by 35 U.S.C. § 112.

COUNT IV

The Claims of the '014, '407, '639 and '827 Patents are Invalid for Indefiniteness.

9. Upon information and belief and after an opportunity for further investigation and discovery, the claims of the '014, '407, '639 and '827 patents are invalid for indefiniteness under 35 U.S.C. § 112.

COUNT V

The Claims of the '014, '407, '639 and '827 Patents are Invalid for Lack of Enablement.

10. Upon information and belief and after an opportunity for further investigation and discovery, the claims of the '014, '407, '639 and '827 patents are invalid for failure of their specifications to contain an enabling disclosure of their claimed inventions.

COUNT VI

The Claims of the '014, '407, '639 and '827 Patents are Invalid for Failing to Disclose the Best Mode.

11. The claims of the '014, '407, '639 and '827 patents are invalid for failure of their specifications to disclose the best mode of their claimed inventions.

COUNT VII

The Claims of the '014, '407, '639 and '827 Patents are Invalid for Failing to Name the Correct Inventor.

12. Upon information and belief and after a reasonable opportunity for further investigation or discovery, the claims of the '014, '407, '639 and '827 patents are invalid for failing to name the correct inventors.

COUNT VIII

The '014 Patent Is Unenforceable Due to Inequitable Conduct

13. The '014 patent is unenforceable due to inequitable conduct. More particularly, and upon information and belief and after a reasonable opportunity for further investigation or discovery, the inventor, the patent attorney, and/or assignees intentionally withheld material prior art from the patent examiner during prosecution of the application giving rise to the '014 patent.

Upon information and belief, the following material prior art was withheld:

- Andreyckak, Bill, *"Power Factor Correction Using the UC3852 Controlled On-Time Zero Current Switching Technique"*; Unitrode Application Note U-132 (ME 035429-035444);
- Todd, Philip C., *"UC3854 Controlled Power Factor Correction Circuit Design"*; Unitrode Application Note U-134 (ME 035463-035482);
- Zendzian, Dave, *"A High Performance Linear Regulator for Low Dropout Applications"*, Unitrode Corporation U-152 (ME 035645-035653);
- Todd, Philip C., *"Boost Power Factor Corrector Design with the UC3853"*; Unitrode Corporation U-159 (ME 035777-035798);
- Panov, Y.V. et al., *"Design Issues for a Zero-Voltage-Switched Power Factor Correction Circuit and DC/DC Converter Power Processing Unit"*; Proceedings of the Virginia Power Electronics Seminar (VPEC) 1993; Blacksburg, VA, September 19-21, 1993; pages 213-224 (ME 036062-036075);
- Jiang, Y. M. et al., *"A Novel Single-Phase Power Factor Correction Scheme"*; Proceedings of the Applied Power Electronics Conference; San Diego, CA, March 7-11, 1993; pages 287-292 (ME 036150-036154); and

- Jiang, Y. et al., “*Single-Stage Single-Phase Parallel Power Factor Correction Scheme*”; Proceedings of the Power Electronics Specialist Conference, Taipei, Taiwan, June 20-25, 1994 (ME 036156-036164).

Plaintiffs produced the above prior art in response to Thermal Dynamics’ requests for production. Thus, it was in their possession, yet they failed to provide it to the Examiner. A reasonable examiner would consider each of the above prior art references material to patentability and, in all likelihood, would have rejected one or more of the claims of the ‘014 patent had these items been properly submitted to the Patent and Trademark Office (“PTO”). The applicant/inventor, assignees, and/or the patent attorney prosecuting the application giving rise to the ‘014 patent intentionally withheld one or more of the above prior art references to induce the patent examiner to allow claims.

The licensee of the ‘014 patent, Miller Electric (which is also a wholly owned subsidiary of ITW, the assignee of the ‘014 patent), published an Owner’s Manual in November 1998 for a power supply known as the Spectrum 2050. The Owner’s Manual contains diagrams of the electrical circuit found in commercial products that are material to the patentability of the alleged invention of the ‘014 patent. An example of such Owner’s Manual may be found at Plaintiffs’ document production at ME 033831 – 033852. The diagram may be found at ME 033845. Miller Electric publicly distributed the Owner’s Manual with commercial products prior to the filing date of the application giving rise to the ‘014. The diagrams in the Owner’s Manual are material to patentability. Miller Electric, however, along with the inventor (an employee of Miller Electric), intentionally withheld the diagrams from the PTO with the intent to deceive the Patent Office.

In addition, upon information and belief and after a reasonable opportunity for further investigation and discovery; the inventor, the patent attorney prosecuting the application that matured in to the '014 patent, and/or the assignee (Miller Electric) withheld a material prior art patent reference, U.S. Patent No. 5,444,356, from the PTO. This reference was withheld with the intent to deceive the PTO.

Furthermore, upon information and belief and after a reasonable opportunity for further investigation or discovery, the inventor and/or Miller Electric withheld a material prior art reference—the '205 patent. The '205 patent discloses and teaches the use of a 800 μ f capacitor in a boost circuit in a welding or cutting power supply. In addition, the '205 patent teaches and discloses the distinction between a utility power and a generator power source that makes increasing the size of the energy storage capacitor advantageous. This reference was withheld by the inventor and/or Miller Electric to deceive the PTO.

Also, in the early 1990's, prior to the earliest claimed priority date of the '014 patent, the European Union and other international regulatory bodies issued regulations mandating power factor correction in power supplies. Such regulations are: IEC Regulations - IEC 555, 555-2, 555-3, 1000, 1000-3-2, 1000-3-3 and EU Regulations EN 60555-2, 60555-3, 61000-3-2, and 61000-3-3. These regulations provided clear motivation to install a power factor correction chip in a welding power supply. The inventor, the applicant(s) and/or patent attorney had knowledge or possession of these regulations and intentionally withheld them from the PTO.

COUNT IX

The '407 Patent is Unenforceable Due to Inequitable Conduct

14. The '407 patent is unenforceable due to inequitable conduct. More particularly, the inventor, patent attorney, and/or assignee of the '407 patent intentionally withheld material prior art references from the Patent Office during the prosecution of the application giving rise to the '407 patent. The following material prior art was withheld:

- Mr. Thommes testified that he recalled having seen an article written by Lloyd Dixon at some point prior to 1998. Mr. Thommes has admitted to contacting Unitrode to determine how to implement a Unitrode power factor correction chip as called for by the '407 patent. Mr. Thommes has also testified to receiving engineering application notes from Unitrode, the maker of the power factor correction chip called for in the '407 patent. The engineering notes recommend and teach how to use the chip in various circuitry. Mr. Thommes followed these notes and did not invent anything. The engineering notes likely contained the article from Mr. Dixon. None of the engineering application notes nor any articles from Mr. Dixon regarding power factor correction were disclosed to the PTO.
- Panov, Y.V. et al., *"Design Issues for a Zero-Voltage-Switched Power Factor Correction Circuit and DC/DC Converter Power Processing Unit"*; Proceedings of the Virginia Power Electronics Seminar (VPEC) 1993; Blacksburg, VA, September 19-21, 1993; pages 213-224 (ME 036062-036075);
- Jiang, Y. M. et al., *"A Novel Single-Phase Power Factor Correction Scheme"*; Proceedings of the Applied Power Electronics Conference; San Diego, CA, March 7-11, 1993; pages 287-292 (ME 036150-036154);

- Jiang, Y. et al., “*Single-Stage Single-Phase Parallel Power Factor Correction Scheme*”; Proceedings of the Power Electronics Specialist Conference, Taipei, Taiwan, June 20-25, 1994 (ME 036156-036164);
- Jovanovic et al., “*Reduction of Voltage Stress in Integrated High-Quality Rectifier-Regulators by Variable-Frequency Control*”, Proceedings of the Applied Power Electronics Conference, Orlando, FL, February 13-17, 1994, pages 569-575 (ME 036142-036149);
- Upon information and belief, Miller Electric used a reference (Welding Processes and Power Sources, Edward R. Pierre, third ed., 1985 (*see, e.g.*, pp. 176-178 (describing a typical inverter welding power source) and pp. 132-137 (discussing power factor correction in welding power sources, as well as normal industry practice to do so)) for training purposes. The reference teaches power factor correction in welding power supplies. This reference directly refutes statements made by the applicant (that the applicant was first to conceive of power factor correction for a welding power supply) during prosecution of U.S. Patent No. 6,002,103 (“the ‘103 patent”) and thus is material to patentability; and
- Translations of German patents DE 4128175A1, DE 4211906A1, DE 4411227A1.

A reasonable examiner would consider each of the above prior art references material to patentability and would have rejected one or more of claims of the ‘407 patent had these items been properly submitted to the PTO. The applicant/inventor, assignees, and/or patent attorney intentionally withheld one or more of the above prior art references to induce the patent examiner to allow claims of the ‘407 patent and the claims of the parent ‘103 patent.

The alleged invention of the '407 patent consists of the addition of an off-the-shelf Unitrode power factor correction chip to a welding power supply. The attorney prosecuting the applications giving rise to the Thommes patents stated that "[a]pplicant's invention includes the recognition that using the chip in the location described in the specification – connected to a boost converter in a welding power supply is inventive." In the early 1990's, prior to the earliest claimed priority date of the '407 patent, the European Union and other international regulatory bodies issued regulations mandating power factor correction in power supplies. Such regulations are: IEC Regulations - IEC 555, 555-2, 555-3, 1000, 1000-3-2, 1000-3-3 and EU Regulations EN 60555-2, 60555-3, 61000-3-2, and 61000-3-3. These regulations provided clear motivation to install a power factor correction chip in a welding power supply. The inventor, the applicant(s) and/or patent attorney had knowledge or possession of these regulations and intentionally withheld them from the PTO.

The applicant (Miller), the assignee (ITW), and/or the patent attorney prosecuting the application giving rise to the '407 patent, knew about U.S. Patent No. 4,521,672, which is material prior art and is assigned to Miller Electric (and now property of ITW). This reference was intentionally withheld from the PTO with the intent to deceive.

In addition, and upon information and belief and after a reasonable opportunity for further investigation or discovery, the patent attorney prosecuting the application giving rise to the '407 patent, George Corrigan, was in possession or had knowledge of material prior art, now U.S. Patent No. 5,444,356, then a patent application prepared and prosecuted by George Corrigan that directly discusses power factor correction in a welding power source. This reference was intentionally withheld from the PTO with the intent to deceive.

Furthermore, upon information and belief and after an opportunity for further investigation or discovery, Mr. Corrigan and/or Miller Electric was in possession of U.S. Patent No. 5,563,777. This reference is material to patentability and was withheld from the PTO by Mr. Corrigan and/or Miller Electric with the intent to deceive.

Also, in the early 1990's, prior to the earliest claimed priority date of the '407 patent, the European Union and other international regulatory bodies issued regulations mandating power factor correction in power supplies. Such regulations are: IEC Regulations - IEC 555, 555-2, 555-3, 1000, 1000-3-2, 1000-3-3 and EU Regulations EN 60555-2, 60555-3, 61000-3-2, and 61000-3-3. These regulations provided clear motivation to install a power factor correction chip in a welding power supply. The inventor, the applicant(s) and/or patent attorney had knowledge or possession of these regulations and intentionally withheld them from the PTO.

COUNT X

The '639 Patent is Unenforceable Due to Inequitable Conduct

15. The '639 patent is unenforceable due to inequitable conduct. More particularly, the inventor, patent attorney, and/or assignee of the '639 patent intentionally withheld material prior art references from the Patent Office during the prosecution of the application giving rise to the '639 patent. The following material prior art was withheld from consideration:

- Alberkrack et al., "*Power Factor Controller IC Minimizes External Components*"; PCIM, February 1993, Pages 42-48 (JR00579-00585).
- Japanese Unexamined Patent Application Publication No. H1-215465, August 8, 1989 (MC097338-097356).

A reasonable examiner would consider the above prior art references material to patentability and, in all likelihood, would have rejected one or more of claims of the '639 patent

had these items been properly submitted to the PTO. The applicant/inventor, assignees, and/or patent attorney intentionally withheld one or more of the above prior art references to induce the patent examiner to allow claims of the '639 patent.

Also, in the early 1990's, prior to the earliest claimed priority date of the '639 patent, the European Union and other international regulatory bodies issued regulations mandating power factor correction in power supplies. Such regulations are: IEC Regulations - IEC 555, 555-2, 555-3, 1000, 1000-3-2, 1000-3-3 and EU Regulations EN 60555-2, 60555-3, 61000-3-2, and 61000-3-3. These regulations provided clear motivation to install a power factor correction chip in a welding power supply. The inventor, the applicant(s) and/or patent attorney had knowledge or possession of these regulations and intentionally withheld them from the PTO.

COUNT XI

The '827 Patent is Unenforceable Due to Inequitable Conduct

16. The '827 patent is unenforceable due to inequitable conduct. More particularly, the inventor, the patent attorney, and/or assignee of the '827 patent intentionally withheld certain material prior art references from the Patent Office during the prosecution of the application giving rise to the '827 patent. Only after a Notice of Allowance was issued in the '827 patent were these material prior art references submitted to the Patent Office. Upon receipt, the Examiner informed applicant that he would not consider this prior art since it was received after a Notice of Allowance was issued. The Examiner also informed applicant that if applicant wished for the art to be considered, it would need to withdraw the application from issue.

Despite knowing these references were material prior art that rendered some of its claims unpatentable, applicant intentionally did not withdraw the '827 patent application from issue and

instead allowed it to issue, thereby ensuring that the Examiner would not consider this material prior art. The following references were intentionally late-submitted to ensure the PTO would not consider them: U.S. Patent Nos. 4,564,742, 4,683,529, and 5,149,935, GB2258958, S59-220285, S62-107868, H1-215465 and H2-41778. A reasonable examiner would consider each of the above prior art references material to patentability and would have rejected one or more of the claims of the '827 patent had these items been properly submitted to the PTO.

The following additional material prior art was withheld from the parent ('407 patent) and grandparent ('103 patent) applications of the '827 patent:

- Mr. Thommes testified that he recalled having seen an article from Unitrode employee Lloyd Dixon at some point prior to 1998. Mr. Thommes has admitted to contacting Unitrode to determine how to implement a Unitrode power factor correction chip as called for by the '827 patent. Mr. Thommes has also testified to receiving engineering application notes from Unitrode, the maker of the power factor correction chip called for in the '827 patent. The engineering notes recommend and teach how to use the chip in various circuitry. The engineering notes likely contained the article from Mr. Dixon. None of the engineering application notes nor any articles from Mr. Dixon regarding power factor correction were disclosed to the PTO.
- Panov, Y.V. et al., "*Design Issues for a Zero-Voltage-Switched Power Factor Correction Circuit and DC/DC Converter Power Processing Unit*"; Proceedings of the Virginia Power Electronics Seminar (VPEC) 1993; Blacksburg, VA, September 19-21, 1993; pages 213-224 (ME 036062-036075);

- Jiang, Y. M. et al., "*A Novel Single-Phase Power Factor Correction Scheme*"; Proceedings of the Applied Power Electronics Conference; San Diego, CA, March 7-11, 1993; pages 287-292 (ME 036150-036154);
- Jiang, Y. et al., "*Single-Stage Single-Phase Parallel Power Factor Correction Scheme*"; Proceedings of the Power Electronics Specialist Conference, Taipei, Taiwan, June 20-25, 1994 (ME 036156-036164);
- Jovanovic et al., "*Reduction of Voltage Stress in Integrated High-Quality Rectifier-Regulators by Variable-Frequency Control*", Proceedings of the Applied Power Electronics Conference, Orlando, FL, February 13-17, 1994, pages 569-575 (ME 036142-036149);
- Miller Electric used a reference (Welding Processes and Power Sources, Edward R. Pierre, third ed., 1985 (*see, e.g.*, pp. 176-178 (describing a typical inverter welding power source) and pp. 132-137 (discussing power factor correction in welding power sources, as well as normal industry practice to do so)) for training purposes. The reference teaches power factor correction in welding power supplies. This reference directly refutes statements made by the applicant (that the applicant was first to conceive of power factor correction for a welding power supply) during prosecution of U.S. Patent No. 6,002,103 and thus is material to patentability; and
- Translations of German patents DE 4128175A1, DE 4211906A1, DE 4411227A1.

A reasonable examiner would consider each of the above prior art references material to patentability and, in all likelihood, would have rejected one or more of claims of the '103, '407 and '827 patents had these items been properly submitted to the PTO. The applicant/inventor, assignees, and/or patent attorney intentionally withheld one or more of the above prior art

references to induce the patent examiner to allow claims of the '827 patent and the claims of the '407 and '103 patents.

The alleged invention of the '827 patent consists of the addition of an off-the-shelf power factor correction chip to a welding power supply as directed by the manufacturer of the off-the-shelf chip. The attorney prosecuting the applications giving rise to the Thommes patents stated that "[a]pplicant's invention includes the recognition that using the chip in the location described in the specification – connected to a boost converter in a welding power supply is inventive." The withheld Unitrode application notes demonstrate that Mr. Thommes did not recognize anything other than following the application notes.

Also, in the early 1990's, prior to the earliest claimed priority date of the '827 patent, the European Union and other international regulatory bodies issued regulations mandating power factor correction in power supplies. Such regulations are: IEC Regulations - IEC 555, 555-2, 555-3, 1000, 1000-3-2, 1000-3-3 and EU Regulations EN 60555-2, 60555-3, 61000-3-2, and 61000-3-3. These regulations provided clear motivation to install a power factor correction chip in a welding power supply. The inventor, the applicant(s) and/or patent attorney had knowledge or possession of these regulations and intentionally withheld them from the PTO.

Upon information and belief and after a reasonable opportunity for further investigation or discovery; the applicant (Miller), the assignee (ITW), and/or the patent attorney prosecuting the application giving rise to the '827 patent, knew about U.S. Patent No. 4,521,672, which is material prior art and is assigned to Miller Electric (and now property of ITW). This reference was intentionally withheld from the PTO with the intent to deceive.

In addition, and upon information and belief and after a reasonable opportunity for further investigation or discovery, the patent attorney prosecuting the application giving rise to

the '827 patent, George Corrigan, was in possession or had knowledge of material prior art, now U.S. Patent No. 5,444,356, then a patent application prepared and prosecuted by George Corrigan that directly discusses power factor correction in a welding power source. This reference was intentionally withheld from the PTO with the intent to deceive.

Furthermore, upon information and belief and after an opportunity for further investigation or discovery, Mr. Corrigan and/or Miller Electric was in possession of U.S. Patent No. 5,563,777. This reference is material to patentability and was withheld from the PTO by Mr. Corrigan and/or Miller Electric with the intent to deceive.

COUNT XII

ITW and Miller are Misusing the '014, '407, '639 and '827 Patents in Bad Faith and for Improper Purposes

17. Plaintiffs' conduct with respect to the subject matter in its Original, Second Amended Complaint and Third Amended Complaint constitutes patent misuse. Plaintiffs made only a general allegation of infringement and did not specify which products allegedly infringe the '014 and '407 patents in the Original and Second Amended Complaint. Only one product produced by Thermal Dynamics, the CutMaster™ 38, has the circuitry necessary to even arguably infringe either the '014 or '407 patent. In their Third Amended Complaint (¶¶26, 27, 32, 33, 38, 39, second 38 and second 39), Plaintiffs generally alleged that other unidentified products may infringe the '014, '407, '639 and '827 patents and request relief against these unidentified products. Thus, to the extent that Plaintiffs assert these patents against other Thermal Dynamics products known to not infringe the '014, '407, '639, and '827 patents, Plaintiffs have impermissibly broadened the scope of their patents by implicating those products

in an attempt to gain an anticompetitive advantage, thereby causing injury to Defendant Thermal Dynamics.

WHEREFORE, Counterclaim Plaintiff Thermal Dynamics prays for:

- A. A judgment that the claims of Plaintiffs' '014, '407, '639 and '827 patents are invalid;
- B. A judgment that the '014, '407, '639 and '827 patents are unenforceable;
- C. Recovery of interest and costs against Plaintiffs and such other and further relief as this Court deems just and proper;
- D. A judgment that this case is an exceptional one, entitling Thermal Dynamics to their reasonable attorneys' fees pursuant to 35 U.S.C. § 285.

Respectfully submitted,

Dated: March 1, 2005

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CERTIFICATE OF SERVICE

I hereby certify that on March 1, 2005, the foregoing instrument was filed with the Court's ECF filing system which will send notification of such filing to the following:

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